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MARCH 25, 1985

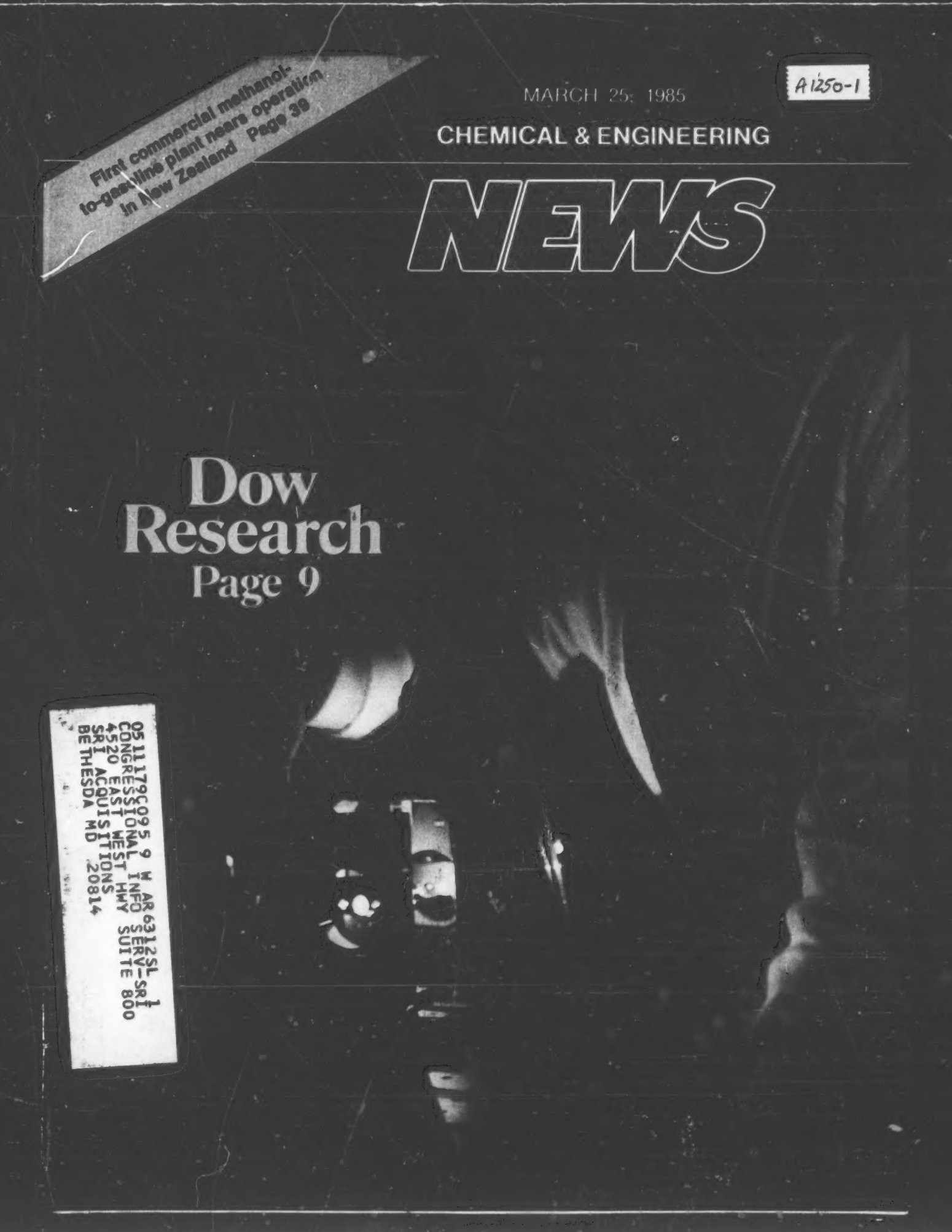
CHEMICAL & ENGINEERING

NEWS

First commercial methanol-to-gasoline plant nears operation in New Zealand Page 39

Dow Research

Page 9



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CHEMICAL & ENGINEERING
NEWS
MARCH 25, 1985

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■ **Union Carbide's long-awaited report on Bhopal gas leak offers hypothesis of how reaction may have occurred.** **Page 4**

■ **Interior Department orders closing of California's Kesterson Reservoir amid farmer protests; cleanup to follow.** **Page 5**

■ **Silvex and 2,4,5-T pesticides, once commonly used as weed killers, have their final uses canceled.** **Page 6**

■ **White House council urges government to increase support for environmental research.** **Page 6**

Cover: Researcher uses laser equipment in Dow Chemical's inorganic chemicals and catalysis lab at firm's central research department, Midland, Mich.

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Books

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ACS News

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News Focus

Dow Chemical's R&D has been redirected toward entrepreneurialism, new product development to achieve goal of 50% of sales in specialties by 1993. **Page 9**

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LETTERS

Pacific Basin economic growth

SIR: The account of Messrs. Sekhar and Swaminathan's activities (C&EN, Jan. 14, page 48) concerning the promotion of economic growth in the Pacific Basin is good news. Specifically, the development of integrated agroindustrial complexes—the total utilization of rice, rubber trees, oil-producing palms, and other crops (including the nonmentioned sugar cane); and the nontraditional uses of traditional agricultural commodities—is worthy of maximum attention throughout the world.

I also agree with the need to interest the mass media in value-added agroindustrial transformation so that responsible leaders and policy makers of the developing nations may give these efforts the top priority they deserve.

Readers concerned with the improvement of life for the majority of the world's population may be interested to learn that the Organization of American States has sponsored a 10-day, similarly oriented workshop, "Industrial Utilization of Renewable Resources," in Jamaica, Jan. 2-12, for participants from the Caribbean Basin countries. This workshop is to be repeated next May in Montevideo, Uruguay. Also, the forthcoming First Pan American Chemical Congress scheduled for Oct. 13–19, in San Juan, P.R., will include a relevant symposium—"Material Transformations: the Key to Economic Growth of the Americas."

H. Harry Szmant, *Adjunct Professor University of Miami, Coral Gables, Fla.*

Rebuttal to Hartford

SIR: In his letter to C&EN (Feb. 11, page 2), Prof. Hartford suggests (in his third and fourth points) that it is posible for people to be completely objective about "secular knowledge" so that it can be presented without "distortion." He uses creationism as an example. Evolution is a philosophy just as creationism is. It is impossible for an adherent of either philosophy (or of any other philosophy) to present scientific evidence without interpreting it in light of the biases of his/her philosophy.

Hartford says that the issue of abortion "is nothing to be mandated by Big Brother." By common consent, the members of our society have declared that theft is wrong. Accordingly, we have mandated and legislated that the perpetrators of this immoral act be punished. We do not make "judgment calls" and say that theft is justifiable in one instance but not in another. Many in our society believe that abortion is immoral. To those who believe this way, it is just as correct for our society to mandate action against aboriton as it is to mandate action against theft.

Hartford makes it clear that he espouses secular humanism. This is in itself a philosophy that, as Hartford says so well, asserts "that a true faith is dedicated to the ascent of man." Certainly he has the privilege of choosing his beliefs. It is ironic, however, that on the one hand he says that second graders should be able to decide about religion on their own, but on the other hand (in this third point) he suggests that "sectarian" philosophy and religion in educational institutions "distort" knowledge and that such institutions should be penalized by having state aid withdrawn from them. This is tantamount to declaring secular humanism as a state religion: If your school refuses to deliver "secular knowledge" in a way that contributes "to the ascent of man" (secular humanism), then your school will be penalized.

He states that "no man can speak for . . . the Infinite" and readily impugns what he refers to as "sectarianism." I suggest that this is nothing more than a sweeping condemnation of most of organized religion. It most certainly condemns those who adhere to Biblical teaching: Christ himself made many statements that are "sectarian" and that speak for the "Infinite."

In his concluding paragraph Hartford may be tyring to be fairminded, but he has failed to do so. He chooses as an "essential for freedom the independence of secular knowledge from the sectarian distortions imposed on it by some religious beliefs." I suggest that this in itself would ultimately deprive the individual of freely expressing his philosophy and religion the way he chooses to. Rather than being an essential for freedom, Hartford's proposal is the antithesis of freedom.

Brian S. Vogt, *Greenville, S.C.*

Corrections

- Dec. 24, 1984, page 20: Data presented in the table are misleading. They are for the maximum emission of pollutants from Union Carbide's Institute, W.Va., plant at given times. Constant average emission levels are much lower. Also, source of these data is the West Virginia Air Pollution Control Commission, not the U.S. Occupational Safety & Health Administration.
- March 18, page 106: The correct address for Barbara G. Wood, chairman of the Publications Committee, is Research Library Manager, Rohm & Haas Co., P.O. Box 718, Bristol, Pa. 19007

Major Changes Could Confront Basic Petrochemicals This Year

As new foreign producers' lower-cost output rises, U.S. industry faces changes in product lines, plant capacities, and operating methods

Bruce F. Greek, C&EN Houston

This could be the year in which long-forecast major changes begin to affect the basic U.S. petrochemical industry. Most industry sources expect only modest, if any, gains in production in 1985. But, after this year, small declines in output could begin as a result of loss of export markets for most petrochemical derivatives. And increased competition in U.S. markets will develop from imports of derivatives made in other countries with lower-cost feedstock and fuel costs.

This leveling-off of production growth of basic petrochemicals will lead to many changes in product lines, plant capacities, and operating methods. Some of the changes could be more severe than the present situation warrants, say some industry sources. For example, the well-known shift by producers of commodity chemicals to specialties may be overdone, with the profitability of the shifts now in question in many cases. Another example is in current growth in grades and product specifications aimed at providing a product obtainable only from a single source. This may be a worthwhile marketing technique, but it does boost inventory costs.

Key Chemicals

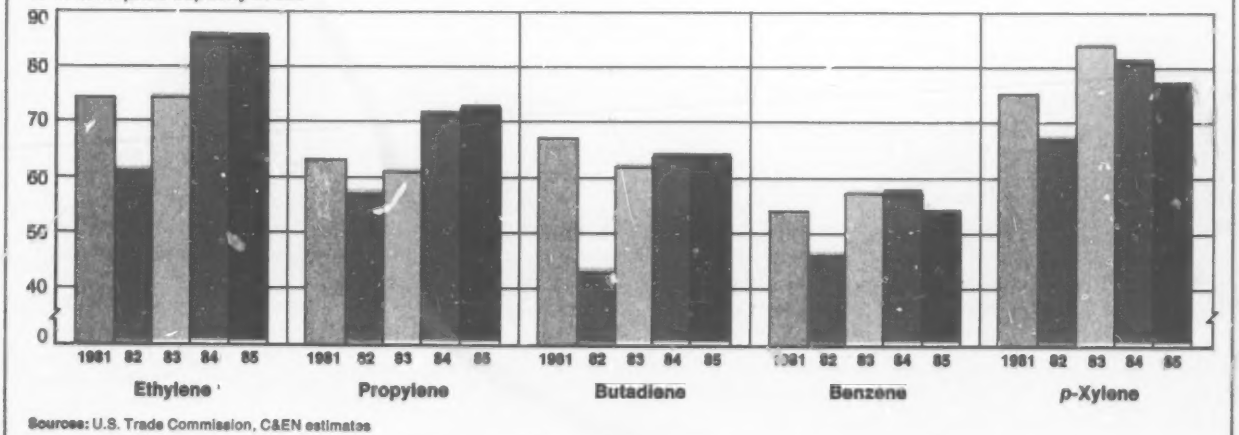
Capacity to make basic petrochemicals certainly will decline for some time under price pressure as it affects profitability. For some products, the shutdown could be huge—as large as the already-completed shutdowns of butadiene capacity. Some 2.5 billion lb of dehydrogenation capacity to make butadiene was shut down from 1974 to 1984, with as much as 80% apparently being scrapped. Much of this capacity was replaced by coproduct butadiene from the rapid expansion of steam cracker capacity during the second half of the 1970s.

A large amount of steam cracker capacity fits into the category of potential shutdown. And any shift toward the heavier feedstocks for steam crackers could increase the effective capacities of important coproducts such as propylene, butadiene, and the aromatics.

A secondary effect on petrochemical capacity could result from the perceived impact of petrochemical products from the new plants in the Middle East. The seriousness of this effect will become clearer in a year or so after most of the Middle Eastern units are operating.

For more on the outlook for basic petrochemicals, see the following pages.

Plant-use rates will level off or drop this year



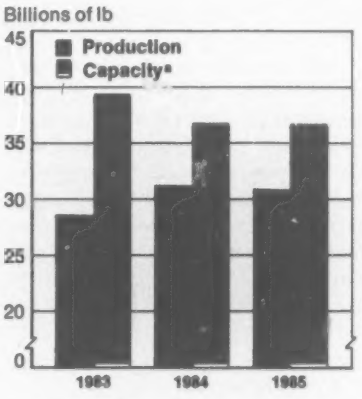
Sources: U.S. Trade Commission, C&EN estimates

$CH_2{=}CH_2$

Ethylene

- *Production holding*
- *Capacity may rise*
- *Prices down*

PRODUCTION/CAPACITY



[a] First quarter; includes shutdown capacity not expected to restart.

MAJOR PRODUCERS

Arco Chemical, Dow Chemical, Exxon Chemical, Shell Chemical, Union Carbide

HOW MADE

Thermal (steam) and catalytic cracking of hydrocarbons ranging from ethane to heavy gas oil

MAJOR DERIVATIVES (U.S.)

Polymers 50%, ethylene oxide 20%, vinyl chloride 15%, styrene 5%

MAJOR END USES (U.S.)

Fabricated plastics 70%, antifreeze 10%, fibers 5%, solvents 5%

FOREIGN TRADE

Exports and imports negligible

PRICES

About 16 cents a lb for most merchant sales (about 30% of production)

U.S. ethylene production last year, at about 31.2 billion lb, may not be surpassed until late in the 1980s. That's about when domestic demand finally will have made up for losses in exports of ethylene derivatives being supplied instead by new foreign competitors.

Production of ethylene in 1985 likely will match last year's. That output level will depend on the current economic trends continuing into the summer, and it also takes into account increasing exports of ethylene derivatives by newcomer producers in the Middle East and elsewhere. It might be a different story, of course, if the U.S. economy improves and if exports of derivatives from other parts of the world decline just modestly, perhaps 10% on the average. In that case, 1985 production could surpass last year's by about 500 million lb. If, on the other hand, the U.S. economy falters in the second half of 1985, and if foreign producers of ethylene derivatives take away a larger part of U.S. exports, then ethylene production could decline—as much as 1 billion lb, or about 3%, by some estimates, to 30 billion lb.

Currently, more than 36 billion lb of nameplate capacity is available for ethylene production. Not all of this capacity is operating, because of low profitability or no profitability to producers at today's prices. It's widely estimated about 2 billion lb of capacity currently is idle but could be operating. These figures mean that operations at an annualized rate of about 31 billion lb are at almost 90% of the on-stream capacity and at 85% of available nameplate capacity.

Some small additional capacity likely will be returned to operable nameplate capacity within a year. For example, by early 1986, an ethylene unit, now owned by Occidental Chemical but built by Cities Service near Lake Charles, La., will be modernized and restarted, adding about 500 million lb to the total U.S. capacity. That will be the only addition to capacity other than debottlenecking programs, which are expected to add minor amounts to the capacity total during 1985.

However, some of the very old capacity, built more than 15 years ago, could be taken permanently out of potential operability during the next year. This old capacity accounts for between 10 and 15% of the nameplate total. If a fifth of it is scrapped in 1985, the loss would be about equal to expected additions. The shutdown and scrapping of all the old capacity will come along in bits and pieces, probably over five years.

Scrapping of old capacity depends on many factors, most important of which is profitability. Even though depreciated, such capacity is inefficient to operate. To raise the efficiency of some units might cost as much as to rebuild completely, and could possibly cost more than would additions to a more modern unit. Moreover, an old unit might require more costly feedstocks than are available, as a result of changes in demand for various hydrocarbons from petroleum and natural gas.

A decision to buy ethylene rather than to make it also could cut into old capacity. And a large decline in exports of ethylene derivatives also could speed decisions to discontinue ethylene operations at marginal production units. Although a producer might now have little export business in derivatives, competition still could increase because other producers need to find a place for derivatives that they can't export profitably.

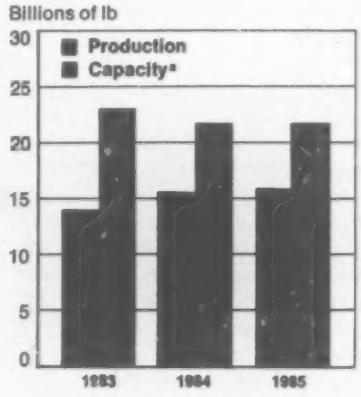
Even with some probable loss in exports of ethylene derivatives, with strong competition for sales, and with some shifting around in operating capacity, the overall use pattern for ethylene will not change much in 1985. Polymers will continue their slow gain in the share of total consumption at the expense of some of the smaller uses such as chlorinated derivatives used as solvents.

$CH_2{=}CH{-}CH_3$

Propylene

- **Production up a bit**
- **Capacity flat**
- **Prices down**

PRODUCTION/CAPACITY



Note: All grades. a First quarter.

MAJOR PRODUCERS

Amoco Chemical, Arco Chemical, Dow Chemical, Exxon Chemical, Shell Chemical

HOW MADE

Recovered from cracked gas streams from steam crackers and refinery catalytic cracking units

MAJOR DERIVATIVES (U.S.)

Polymers 35%, acrylonitrile 20%, propylene oxide 10%, cumene 10%

MAJOR END USES (U.S.)

Fabricated plastics 50%, fibers 15%, solvents 15%

FOREIGN TRADE

Exports—negligible, imports—holding at about 500 million lb for 1985

PRICES

Chemical grade 16 cents per lb, polymer grade 17 cents per lb

The outlook for propylene has at least one similarity to that for ethylene—a nearly complete halt in production growth during 1985 after a major recovery in 1984. Production of all grades of propylene in 1985 will be up slightly to about 15.7 billion lb from about 15.2 billion lb last year. This covers all uses of propylene for making chemicals and polymers, but excludes refinery uses for making gasoline components such as alkylate. The production gain of slightly more than 1% compares with a nearly 11% gain in 1984, the slowdown resulting from more severe competition in many export markets for U.S. propylene derivatives.

Most polypropylene derivatives are made from chemical and polymer grades of propylene. A few exceptions use "refinery grade," whose propylene content may range from 35 to 90%. Gasoline components also use refinery-grade propylene, thereby acting as competition for chemical uses. These uses also are in competition with the upgrading of the refinery-grade propylene stream for use in making derivatives.

Roughly two thirds of propylene is produced in refineries, mainly in fluid catalytic cracking units; the other third is produced as a coproduct of ethylene in steam crackers. Practically all of the propylene made in steam crackers is used to make chemical and polymer derivatives and an important part of refinery propylene also is used for derivatives. Except for the relatively small quantity of derivatives made directly from refinery-grade propylene, most refinery-grade propylene used for derivatives must first be purified at a significant cost. The purification cost also makes the economics of derivative manufacture favor use of coproduct propylene wherever possible.

Sufficient propylene capacity exists to meet demand if that available from refinery operations is included. But propylene must be priced high enough to justify its being drawn away from the fuel uses. This capacity could be expanded, if returns on investment are sufficient, because cracking units in refineries produce more propylene than now is purified or used directly in making derivatives. However, there is a limit to the quantity of propylene available at any time because the refinery cracking units are operated to make gasoline and other fuel components, and not to make propylene.

Shifts in operation of steam crackers and of refineries have led some derivatives producers to sound an alarm about a possible shortage of the chemical and polymer grades of propylene. This alarm has caused higher prices of propylene relative to ethylene. Ten years ago, a rough rule of thumb was that the price of propylene was 70% that of ethylene. Now propylene prices are the same as ethylene prices or slightly higher, reflecting the apparently less plentiful supply.

The causes of the current rough parity in prices for ethylene and propylene come from the economic squeeze of the early 1980s. The economic recession led steam cracker operators to adapt to the lowest-cost feedstocks, largely ethane, to make ethylene at lowest possible cost. At the same time, refinery operations were cut back, because of lower demand for fuel products. More recently, imports of fuel products have further reduced refinery operations.

However, no real long-term shortage of propylene is expected by industry sources. Even without steam cracker operators changing to heavier feedstocks to raise propylene yields to meet demands, more propylene could be taken from refinery fuel uses, if prices were to rise.

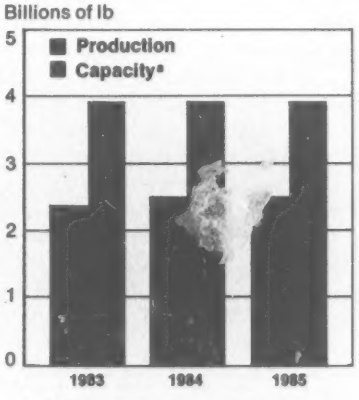
The conditions of propylene prices and supply aren't expected to have any major impact on manufacture of derivatives. As is the case with ethylene polymers, polypropylene will grow faster than will most other propylene derivatives and will take a slowly growing share of propylene consumption.

$CH_2{=}CH{-}CH{=}CH_2$

Butadiene

- *Production limited*
- *Capacity large*
- *Prices holding*

PRODUCTION/CAPACITY



a First quarter; extraction capacity; includes shutdown capacity not expected to restart.

MAJOR PRODUCERS

Amoco Chemical, El Paso Products, Exxon Chemical, Shell Chemical, Texas Petrochemicals

HOW MADE

Recovered from steam cracker product streams; dehydrogenation of butylenes from refinery catalytic cracking

MAJOR DERIVATIVES (U.S.)

Styrene-butadiene rubber 40%, polybutadiene rubber 25%,

MAJOR END USES (U.S.)

Fabricated rubber products 75%, fibers 10%

FOREIGN TRADE

Exports—holding at about 150 million lb in 1985, imports—may fall to about 600 million lb in 1985

PRICES

About 30 cents per lb

U.S. butadiene producers will be pushing plants hard in 1985, including some recently restarted units. Nevertheless, they probably will be capable of supplying less than 80% of the butadiene expected to be consumed domestically this year. Imports, growing ever more difficult to obtain, will have to make up the difference.

Production of butadiene from all sources in the U.S. will be about the same as in 1984, a little more than 2.5 billion lb. But final output will depend on a number of factors, including demand (largely for various elastomers), feedstocks sent to steam crackers, and the strength of the dollar.

Plenty of capacity exists to make butadiene, either as a coproduct of making ethylene in steam crackers or by dehydrogenation of butylenes made in refineries. This capacity is a measure of the ability of producers to extract butadiene from streams of C_4 hydrocarbons produced in the U.S. or imported. During the past two years, it has been reduced as significant quantities of capacity have been scrapped. Some of the capacity now counted in the total probably will be scrapped without ever being run again, but the "on-standby" designation hasn't yet been changed.

Except for a small amount of butadiene produced by dehydrogenation of butylenes, all butadiene consumed in the U.S. is a coproduct of ethylene manufacture. Critical to butadiene production is the feedstock used in steam crackers to make ethylene. If ethane is the feedstock, butadiene production is minimal. As feedstock to a steam cracker is shifted toward heavier hydrocarbons, the butadiene yield rises rapidly. On the average in 1984, the yield of butadiene in steam crackers was less than 8% of the ethylene yield, an output of two thirds or less of the yield of butadiene relative to ethylene in Europe where naphtha still continues to be the major steam cracker feedstock.

In Europe, the source of most butadiene imported into the U.S., the situation is changing. Ethylene units are being shut down and their feedstock composition is changing toward lighter hydrocarbons. All this is being done in anticipation of imports of ethylene derivatives from lower-cost feedstock sources in the Middle East. At the same time, these changes are reducing the amount of coproduct butadiene available for internal use and for export to North America and Japan.

Therefore, the current question among consumers of butadiene is whether imports will be available to meet the expected deficit in U.S. production. Countries other than in Europe have or appear to have little capability to supply much butadiene. Except for the strength of the dollar, competition could reduce this potential supply. As long as the dollar remains strong, the incentive to sell to the U.S. will remain in preference to sales to countries such as Mexico where currency is being devalued.

Prices of butadiene nevertheless might firm slightly during 1985 if demand should increase again this year following the increase in demand of more than 9% in 1984. If prices firm by a small amount as the result of perceived stronger demand in the U.S., then both imports and production could rise.

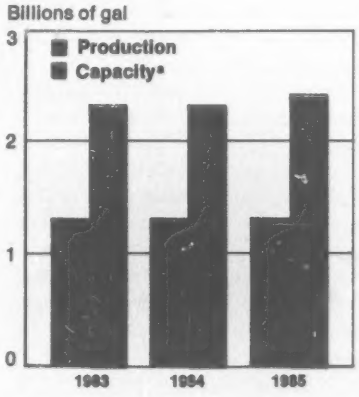
Some increase in butadiene prices has not reduced consumption gains much from what had been anticipated with the economic recovery. In 1985, some of the smaller uses such as acrylonitrile-butadiene-styrene resins may grow faster than will the major elastomer uses. This growth, slowing after a large gain in 1984, will not be large enough to change the end use pattern much. In spite of some development work with this unusual diolefin, no new uses will appear to take significant quantities of butadiene.

At current and expected prices for butadiene for 1985, production will just about hold steady or inch up slightly. Consumption will hold about even.

Benzene

- **Production flat**
- **Capacity holding**
- **Prices firming**

PRODUCTION/CAPACITY



a First quarter.

MAJOR PRODUCERS

Amoco Oil, Arco Chemical, Coastal Corp., Exxon Chemical, Gulf Oil Products, Shell Oil, Sun Oil

HOW MADE

Separated from aromatic streams from refineries, olefin plants, coke ovens; dealkylation of toluene

MAJOR DERIVATIVES (U.S.)

Ethylbenzene 50%, cumene 20%, cyclohexane 15%, aniline 5%

MAJOR END USES (U.S.)

Styrenic plastics 35%, phenolic resins 20%, nylons 15%

FOREIGN TRADE

Exports—small, remaining at about 20 million gal in 1985; imports—slipping to 150 to 160 million gal in 1985

PRICES

List price $1.17 per gal

The best news to come to benzene producers this year is a slight firming of prices. Beyond that, it's a pretty ho-hum outlook for benzene: Production probably will not grow appreciably, nor will capacity rise further following the addition of a new Sohio plant at the end of 1984.

The price firming, however, may not do enough for benzene producers. Spot prices for benzene, reflecting only a part of total sales, increased in small increments beginning in January. By early March, they were above the list price, which had dropped significantly in 1984.

These spot prices reflect mainly demand factors and feedstock conditions beyond those in the chemical industry. The spot price rise went along with firming of gasoline prices, and was related to the value benzene has in gasoline, both as a volume component and as an octane contributor to the total pool octane value. Some minor effect was felt from the drawdown of benzene inventories in 1984 and from anticipated improved demand for some end products of benzene.

During 1984, benzene prices fell more than 30 cents a gal, or nearly 20%, because of stagnant demand, lower prices for some derivatives, large inventories, and declines in crude oil prices. Spot prices ranged slightly below list prices during the second half of the year, further hurting profits from recovery and selling of benzene.

That situation changed during the first quarter of 1985. Now, questions are developing as to whether these price increases, small as they are, will hold for the rest of the year. Benzene demand in the second quarter probably will be as good as in the first quarter. Later on, demand may weaken, pulling down production as inventories build.

Benzene production for all of 1985, therefore, likely will end up about the same as in 1984, at 1.3 billion gal. This hold on production could mean that a slight decline will occur in the operating rate for total nameplate capacity, but it essentially will remain at about the same 55% rate that it has been the past two years.

Nameplate capacity, much of which is in or closely attached to refineries, long has been considered to be well overstated. If sufficient aromatics streams could be obtained, then the nameplate capacity might nearly be reached. But even so, capacity still could be overstated because of units, long shut down at steel mills and small refineries, which are not expected ever to be run again. In addition, several relatively large benzene units currently are shut down, with questions about future operation concerning some of them.

Some small amounts of capacity have been scrapped, but during the fourth quarter of 1984, Sohio Chemical started up its new unit with a nameplate capacity of 115 million gal a year. The actual net gain in capacity for 1985 operation is hard to pin down, but probably at least two thirds of Sohio's new unit capacity should be added to the total.

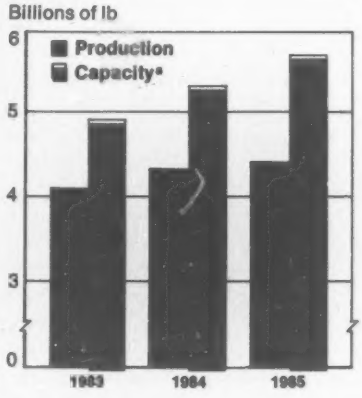
Part of benzene capacity is attached to steam crackers where benzene is separated from the pyrolysis gasoline fraction of the product stream. Typically, benzene produced in steam crackers has accounted for about 25% of production, or a bit more. The other part of benzene supply—imports—could decline a bit in 1985 unless domestic prices rise. As U.S. selling prices decline during 1984, imports also decline because of little or no profit to traders in benzene. This year, imports could supply at least 10% of U.S. benzene demand, but certainly not more than 15%.

None of the major uses of benzene will show much gain in demand during 1985. One—styrene—because of imports of polymers, could decline slightly. The result, then, for benzene will be a year of minor change in production and a struggle to squeeze a bit of profit from a slight price firming.

p-Xylene

- ***Production may slow***
- ***Capacity up a bit***
- ***Prices could firm***

PRODUCTION/CAPACITY



[a] First quarter.

MAJOR PRODUCERS

Amoco Chemical, Arco Chemical, Chevron Chemical, Exxon Chemical, Koch, Phillips Chemical

HOW MADE

Separated from mixed xylene streams made in oil refineries and steam cracking olefins plants

MAJOR DERIVATIVES (U.S.)

Dimethyl terephthalate 55%, terephthalic acid 45%

MAJOR END USES (U.S.)

Polyester fibers 80%, blow-molded items (mostly bottles) 10%, films 5%

FOREIGN TRADE

Exports—may exceed 1 billion lb in 1985, imports—may be greater than 100 million lb in 1985

PRICES

List price 22 cents per lb delivered

Capacity to make *p*-xylene continues to expand. It grew again in 1984. But, although that doesn't help prices or profitability for producers, it does bring a small increase to production, if for no other reason than that it increases inventories necessary to meet expected sales volumes.

Because of a net capacity increase during 1984 of about 400 million lb, output during 1985 likely will rise slightly, perhaps about 100 million lb, to 4.4 billion lb. The final figure will depend on availability to producers of mixed xylenes, on the export markets for *p*-xylene (as well as for *o*-xylene), and on the size of imports of apparel made using polyester fibers.

A production total of 4.4 billion lb of *p*-xylene in 1985, however, will not raise the plant operating rate. Nameplate capacity for this year will reach 5.7 billion lb, with all of it expected to operate to supply sales demand and inventory building as needed during the year. The actual operating rate will be about 77% on the average, down slightly from the estimated average rate of 81% in 1984.

The various factors that influence production probably will change only slightly during 1985 when growth in output will be quite close to, but probably slightly below, growth in gross national product. But these factors also could strongly influence *p*-xylene production. For example, mixed xylenes could become more expensive because of the more rapid shift toward unleaded gasoline, which results from lowered limits on use of lead alkyls, more stringent controls against misfueling of catalytic-muffler-equipped cars, and a higher percentage of cars requiring premium unleaded fuels. If demand for *p*-xylene does not remain strong enough to pay the competitive price for it to be removed from the mixed xylenes streams, then actual production could decline.

At the same time, the export demand also could change. Based on recent experience, exports for 1985 are estimated to top 1 billion lb of *p*-xylene. This estimate depends upon a growing demand for the isomer for polyester fibers and for some fabricated items in the Pacific Rim countries. It also depends upon continued production difficulties at plants in developing countries that require *p*-xylene either for their own fiber production or to fill commitments for exports made before the plants were completed.

If fiber demand in some of these countries rises steeply, partly spurred by exports of apparel to the U.S., and if operational problems get worse, export demand for *p*-xylene could soar by an additional 100 million to 200 million lb in 1985. Of course, this rise in export demand would not translate back into an equally large increase in production. Most of the additional exports of *p*-xylene would return to the U.S. as apparel, offsetting consumption of polyester fibers for apparel made in the U.S. and reducing total demand for *p*-xylene by nearly an equal amount.

With almost 80% of *p*-xylene eventually ending up in fibers made in the U.S., the outlook for fibers and apparel demand continues to be critical to total *p*-xylene consumption. In general, polyester fiber demand in the U.S. is expected to do no better than hold even. A slight decline is more likely.

But demand for *p*-xylene in making polyester bottle resins, both the polyethylene and the polybutene terephthalates, probably will increase an amount about equal to the decline in demand for use in fibers.

The result of a lower demand for *p*-xylene for making polyester fibers and a higher demand for making bottle resins could make *p*-xylene one of the few major-volume petrochemicals to show a change in its use pattern in 1985. If a change to 75% or less of U.S. consumption for fibers and to more than 15% for bottle resins doesn't occur in 1985, it certainly will in 1986.